

## CLAIMS

1. A system for monitoring the use of heat energy  
use of a heat transfer device within an apartment  
5 unit comprising  
    a register/transmitter,  
    a pair of pressure/temperature transducers to  
be connected proximate the upstream and downstream  
sensing points of a heat transfer device for  
10 supplying temperature and pressure data to said  
register/transmitter,  
    said register/transmitter including  
        first computational means for periodically  
multiplying the square root of the change in  
15 pressure times the change in temperature from the  
pressure and temperature data supplied from said  
pair of pressure/temperature transducers,  
        accumulating means for accumulating the  
computed square root of the change in pressure times  
20 the change in temperature, and  
        means for periodically transmitting the  
serial number of the heat transfer device and the  
accumulated computed square root of the change in  
pressure times the change in temperature, and  
25 host computer means including  
    receiver means for receiving the serial  
number and the accumulated computed square root of  
the change in pressure times the change in  
temperature and  
30 second computational means for  
    identifying the specific heat  
transfer device and

computing the BTU's of received  
accumulated computed square root of the change in  
pressure times the change in temperature with stored  
catalog data for the specific heat transfer device  
5 identified.

2. A system for monitoring the use of heat energy  
use of a heat transfer device within an apartment  
unit according to claim 1, wherein said second  
10 computational means comprises means for multiplying  
the accumulated computed square root of the change  
in pressure times the change in temperature by

a. the time duration between the periodic  
multiplying of the square root of the change in  
15 pressure times the change in temperature,

b. 8.33, and

c. a constant defined by dividing a flow  
rate by the square root of the pressure drop across  
the heat transfer device for that flow rate as  
20 defined in the manufacturer's catalogue for that  
heat transfer device.

3. A system for monitoring the use of heat energy  
use of a heat transfer device within an apartment  
25 unit according to claim 1, wherein said means for  
periodically transmitting the accumulated computed  
square root of the change in pressure times the  
change in temperature additionally transmits the  
serial number of the heat transfer device and  
30 wherein the host computer means receives as inputs  
the specific type of heat transfer device associated  
with that serial number and catalog data for that  
specific type of heat transfer device.

4. A system for monitoring the use of heat energy use of a heat transfer device within an apartment unit comprising

a register/transmitter,

5 a pair of pressure/temperature transducers to be connected proximate the upstream and downstream sensing points of a heat transfer device for supplying temperature and pressure data to said register/transmitter,

10 said register/transmitter including

computational means for periodically multiplying the square root of the change in pressure times the change in temperature from the pressure and temperature data supplied from said

15 pair of pressure/temperature transducers, and

accumulating means for accumulating the computed square root of the change in pressure times the change in temperature and

20 means for periodically transmitting the serial number of the heat transfer device and the accumulated computed square root of the change in pressure times the change in temperature.